J.BAUER Electronics

Limited Edition 7 Watt LaserBee™ with Data Logging
HOBBYIST LASER POWER METER

The **Limited Edition 7 Watt LaserBee™** Laser Power Meter was designed to enable the hobbyist technician to test higher power lasers and laser diodes. It was designed for people like ourselves that needed to know the output power of the numerous lasers we had in the shop. It needed to check a wide range of lasers up to 6700mW.

We didn't want to spend $2000.00 to $6,000.00 to get a commercial Laser Power Meter. We just wanted to know which laser was stronger than another and needed to know approximately how many milliwatts of output power each laser had.

With the emergence of the Green DPSS Modules/Lasers and the newer Blu-Ray and 445nm Laser Diodes, in the past few years, we needed to check these as well.

We also needed a way of testing different Laser Wavelengths without needing to use a Correction Factor chart for optical correction.

In addition we needed to be able to Data Log (record) the readings over time. The new Limited Edition 7Watt LaserBee™ has that feature available as an option. The 7Watt LaserBee™ Data Logging feature comes on a CD. The LaserBee™ EagleEye™ Interface Software is only available in Windows versions.

The 7Watt LaserBee™ uses an OPHIR Thermopile Sensor pre-calibrated by OPHIR. The output of the 7Watt LaserBee™ is shown on a 4-1/2 digit LED Display and when using the EagleEye™ Data Logging Interface the output is also displayed on your computer's screen.
A Zeroing/Nulling control is also provided to zero the display between Laser Power readings.

Just plug the supplied cable between the 7W LaserBee™ and the Thermopile then plug the supplied 7.5VDC AC adapter to the LPM and shine your Laser's beam on the Thermopile Sensor to get readings in 1 mW increments.

The readings of the 7Watt LaserBee™ LPM start at 1mW and go to 6700mW.
For consistent readings, make sure that all measurements are taken at the same distance between the Sensor and the Laser being tested. (6" to 18") and that the entire Laser beam falls on the underline precise center of the Sensor of the 7Watt LaserBee™ LPM.

It is very important NOT to collimate the laser beam to a pin point as this may damage the Thermopile coating using higher powered Lasers.

It is important to note that the entire laser beam should fall on the precise center of the OPHIR head's Sensor and the Laser's beam should be adjusted accordingly (an acceptable/usable beam diameter would be from **2.0mm to 10.0mm**. The larger the better).

User Instructions

The 7Watt LaserBee™ LPM is very easy to use.
Plug the supplied Sensor cable between the 7Watt LaserBee™ and the OPHIR Thermopile then connect the supplied 7.5VDC AC adapter and turn ON your LPM.

It will take a few seconds for the LED display to stabilize… then use the Zeroing control to set the display to zero. Shining a Laser onto the OPHIR Sensor will show the power in Watts or decimal fractions of Watts of your Laser.

DATA LOGGING OPTION FEATURE

At the top of the 7Watt LaserBee™ enclosure is a 9 pin RS-232 DB9 (F) connector for the Data Logging feature supplied cable when using the EagleEye™ Interface Software that is included on the supplied CD.

RS-232 Port
Connect the DB9 (F) connector to an RS232 extension cable (not supplied) and plug that cable into your computer's RS232 Serial Port.

Once you have read the entire 7Watt LaserBee™ Instructions supplied on the CD, install the EagleEye™ Interface software found on the same CD. Configure the EagleEye™ Interface Software to the Communications Port (Com Port) that your computer uses. (See your Windows Device Manager for the Port being used). The EagleEye™ Software is self explanatory and easy to use. Once the software is installed you can turn ON your 7Watt LaserBee™ LPM.

USB Port
If your computer only has a USB port but not an RS232 Serial port, you can use a USB to RS232 Converter Cable (supplied) to connect between the 7Watt LaserBee™'s 9 pin RS-232 DB9 (F) connector and your computer's USB port. Just follow the USB to RS232 Converter manufacturer's instructions on installing the USB Driver or read the software installation instructions on the CD. Again, configure the EagleEye™ Software to the Communications Port (Com Port) that your computer uses for the USB converter cable. Once the drivers and software is installed and your computer has been re-booted you can turn ON your 7Watt LaserBee™ LPM.

When using the EagleEye™ Data Logging Interface Software it is to be noted that the 4-1/2 digit LED display value on the LaserBee™ may not follow the PC Interface value on screen exactly. The LED display on the LaserBee™ has a small delay between detecting the data from the OPHIR head and displaying it.

The EagleEye™ Micro-Controller and high precision 16bit ADC circuit that uses that same data is much quicker and more accurate to read and display that data on the EagleEye™ Interface Software. You may typically see differences of 1mW to 2mW between the two displays because of this time lag. The most accurate reading is the EagleEye™ reading.

NOTE:
DO NOT TOUCH THE SENSOR SURFACE AT ANY TIME FOR ANY REASON

The Thermopile Sensor detects heat on its surface. Since it requires time to heat and cool the Sensor… When taking a power reading… you must wait for the reading on the LCD to stabilize. Once stabilized and set to zero a reading can be taken.

The Thermopile Sensor is very sensitive to heat. It can easily pickup the heat of your hands or body. The testing area should be free of high intensity lights giving off heat. The testing area should also be free of any air currents that may be detected by the Sensor. Just gently blowing on the sensor will change its temperature and therefore its output.

For the most accurate readings… let the Thermopile Sensor acclimate to the test area's ambient temperature for at least 20-30 minutes.

DO NOT mount the Thermopile Sensor into an enclosure… doing so will not allow the Thermopile radiator to dissipate the Laser beam's heat properly. We are dealing with very small heat differential values.

When physically adjusting the position of the Thermopile Sensor, care must be taken to not touch the Thermopile's Heat-Sink directly with your fingers as this will transfer your finger's heat to the Heatsink and create variations/errors in the readings.
Use a non heat conducting tool (ie. plastic or wood), when/if changing the Thermopile's position.

The actual Sensor surface (the small 12mm diameter grey disk) should **NEVER EVER** be touched with your fingers or any chemicals. The oil from your fingers will cause the sensor to reflect more of the Laser's beam and re-coating and/or re-calibration may become necessary by OPHIR. Cleaning of the Sensor should only be done by gently blowing *dry* air over its surface. Remember, your breath is *very moist*…

Max Power

It is to be noted that the supplied Ophir Thermopile head is capable of a Max Power rating of 20Watts under certain electrical and thermal conditions.

The 7Watt LaseerBee™ is designed to allow a max reading of 6700mW but only for short periods of time. The Sensor head's thermal mass is designed to accept a continual Laser Beam power of 4 Watts. Applying greater than 4 Watts of sustained Laser beam power to the OHIR Head will require additional cooling. This can be done by simply screwing some blocks of aluminium to the 2 sides of the head (screw holes are provided) to increase the head's thermal mass.

Specifications

Power Supply:	7.5VDC AC power Adapter (included)
Sensor Type:	OPHIR Thermopile
Sensor Area:	12mm Dia.
Sensor Cable Length:	24"
Thermopile Dimensions:	1.50" x 1.50" x 1.35"
Power Range:	1mW to 6700mW
Power consumption:	170milliamps @ 7.5VDC
Total Dimensions:	5.90: x 3.30" x 1.50"
PC Interface Software:	on CD with data logging option

If you purchased your 7Watt LaserBee™ from our Website you can contact us if you require repairs or assistance at :-   info@laserbeelpm.com

If you purchased your 7Watt LaserBee™ from eBay you will need to contact us on eBay through the item number that you purchased.